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Hints for a TeV scale W_R at the LHC and constraints on leptogenesis

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The discovery of a right-handed charged gauge boson $W_R^{\pm}$ with mass of around a few TeV, for example through a signal of two leptons and two jets that has been reported by CMS to have a 2.8σ local excess or through a signal of a resonance decaying into a pair of Standard Model gauge bosons showing a local excess of 3.4σ (2.5σ global) reported by ATLAS search, can have severe implications for the leptogenesis mechanism, which offers a very attractive possibility to explain the baryon asymmetry of the universe. In this talk I shall discuss the constraints on the high scale as well as the TeV scale leptogenesis from lepton number violating scattering processes mediated via right-handed heavy neutrinos (N_R) and the right-handed doubly charged Higgs Δ_R^{++} which can rule out the possibility of successful leptogenesis for $W_R^{\pm}$ with mass in the TeV range. Complementing the above results, we shall also discuss the low-energy subgroups of superstring motivated E_6 model which can allow for high-scale leptogenesis, and explain the excess signal at the LHC reported by the CMS experiment from resonant slepton decay.

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